

Amendments to the Claims

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application.

1-33. (canceled)

34. (new) A method of assembling tyres for vehicle wheels, comprising:

disposing a carcass structure on a primary drum;

disposing a belt structure on an auxiliary drum;

picking up the belt structure from the auxiliary drum to transfer the belt structure to a position coaxially centered with respect to the carcass structure;

shaping the carcass structure into a toroidal configuration;

applying a tread band onto the belt structure; and

applying a pair of sidewalls to the carcass structure on opposite sides of the carcass structure;

wherein the carcass structure comprises at least one carcass ply in engagement with annular anchoring structures axially spaced apart from each other,

wherein the belt structure comprises at least one belt layer, and

wherein at least one of applying the tread band and applying the pair of sidewalls is carried out by winding up at least one continuous strip element of elastomer material in contiguous circumferential coils around the carcass structure.

35. (new) The method of claim 34, wherein applying the tread band is carried out by winding at least one first continuous strip element of elastomer material, in a form of contiguous circumferential coils, around the belt structure.

36. (new) The method of claim 34, wherein applying each of the pair of sidewalls is carried out by winding at least one second continuous strip element of elastomer material in contiguous circumferential coils around the carcass structure.

37. (new) The method of claim 34, wherein applying the pair of sidewalls is carried out after the carcass structure has been shaped into the toroidal configuration.

38. (new) The method of claim 34, wherein applying the pair of sidewalls is carried out after applying the tread band.

39. (new) The method of claim 34, wherein applying the pair of sidewalls is carried out before applying the tread band.

40. (new) The method of claim 34, wherein the at least one strip element is fed from at least one delivery member disposed close to the tyre being assembled, simultaneously with winding up the at least one strip element around a geometric axis of the carcass structure.

41. (new) The method of claim 40, wherein feeding the at least one strip element is carried out by extrusion through the at least one delivery member.

42. (new) The method of claim 40, further comprising:
giving the primary drum a circumferential-distribution rotary motion around a geometric rotation axis of the primary drum, so that the at least one strip element is circumferentially distributed around the geometric axis of the carcass structure; and
carrying out controlled relative transverse-distribution displacements between the primary drum and the at least one delivery member, so that the at least one strip element forms a plurality of coils disposed in mutual side-by-side relationship;
wherein giving the primary drum the circumferential-distribution rotary motion and carrying out the controlled relative transverse-distribution displacements are carried out concurrently with winding up the at least one strip element.

43. (new) The method of claim 42, wherein the controlled relative transverse-distribution displacements are carried out by movement of the primary drum.

44. (new) The method of claim 42, wherein the circumferential-distribution rotary motion and the controlled relative transverse-distribution displacements are carried out by an actuating assembly engaging the primary drum.

45. (new) The method of claim 34, wherein after transferring the belt structure to a position coaxially centered with respect to the carcass structure and before winding up the at least one strip element, the primary drum is moved towards at least one delivery member from a position in which the primary drum interacts with a transfer member shifting the belt structure onto the carcass structure.

46. (new) The method of claim 40, further comprising:
moving the primary drum away from the at least one delivery member to a position near devices for disengaging the tyre from the primary drum.

47. (new) The method of claim 34, further comprising:
transferring the primary drum to a region between at least one first delivery member for applying the tread band and at least one second delivery member for manufacturing the sidewalls.

48. (new) The method of claim 34, wherein disposing the carcass structure, shaping the carcass structure, applying the tread band, and applying the pair of sidewalls are cyclically carried out following a controlled rate on at least two primary drums, and
wherein disposing the carcass structure on a first primary drum is carried out before completing assembly of a tyre on a second primary drum.

49. (new) The method of claim 34, further comprising:

forming the carcass structure on a building drum; and
transferring the carcass structure from the building drum to the primary drum.

50. (new) The method of claim 49, wherein transfer of the carcass structure from the building drum to the primary drum is carried out after engagement of the belt structure with the carcass structure.

51. (new) The method of claim 49, wherein forming the carcass structure comprises:
associating auxiliary inserts for elastic support with the at least one carcass ply;
wherein each of the auxiliary inserts comprises:

a radially internal edge disposed close to one of the annular anchoring structures;
and
a radially external edge disposed close to a side edge of the belt structure.

52. (new) The method of claim 34, further comprising:
applying the belt structure to the carcass structure; and
pressing the belt structure against the carcass structure to obtain better adhesion of the belt structure against the carcass structure.

53. (new) The method of claim 34, further comprising:
storing carcass structures in engagement with respective belt structures;

wherein the storing is carried out before at least one of applying the tread band and applying the pair of sidewalls.

54. (new) An apparatus for assembling tyres for vehicle wheels, comprising:

- at least one primary drum;
- an auxiliary drum;
- a transfer member;
- at least one unit for applying a tread band onto a belt structure; and
- at least one unit for applying a pair of sidewalls against opposite lateral walls of a carcass structure;

wherein the at least one primary drum is arranged to support the carcass structure,

wherein the carcass structure comprises at least one carcass ply in engagement with annular anchoring structures axially spaced apart from each other,

wherein the auxiliary drum is set to carry the belt structure,

wherein the transfer member moves the belt structure from the auxiliary drum to the carcass structure,

wherein at least one of the units for applying the tread band, at least one of the units for applying the pair of sidewalls, or at least one of the units for applying the tread band and at least one of the units for applying the pair of sidewalls comprises at least one delivery member, and

wherein the at least one delivery member lays down at least one continuous strip element of elastomer material in contiguous circumferential coils on the carcass structure.

55. (new) The apparatus of claim 54, wherein the at least one delivery member comprises at least one extruder.

56. (new) The apparatus of claim 54, further comprising:
at least one actuating assembly;
wherein the at least one actuating assembly is associated with the at least one delivery member,
wherein the at least one actuating assembly drives the at least one primary drum in rotation around a geometric axis of the at least one primary drum so that the at least one strip element is circumferentially distributed onto the carcass structure, onto the belt structure, or onto the carcass structure and onto the belt structure, and
wherein the at least one actuating assembly causes controlled relative transverse-distribution displacements between the at least one primary drum and the at least one delivery member for distributing the at least one strip element to form the circumferential coils disposed in mutual side-by-side relationship.

57. (new) The apparatus of claim 56, wherein the at least one actuating assembly operates on the at least one primary drum to move the at least one primary drum relative to the at least one delivery member.

58. (new) The apparatus of claim 57, wherein the at least one actuating assembly is integrated into a robotized arm engaging the at least one primary drum.

59. (new) The apparatus of claim 57, wherein the at least one actuating assembly comprises:

a carriage movable along a guide structure between a first position and a second position;
wherein in the first position, the carriage supports the at least one primary drum near devices for disposing the carcass structure, and

wherein in the second position, the carriage supports the at least one primary drum near the at least one delivery member.

60. (new) The apparatus of claim 56, further comprising:
devices for disposing the carcass structure on the at least one primary drum;
wherein the at least one actuating assembly is arranged to cause translation of the at least one primary drum towards the at least one delivery member, starting from a position in which the at least one primary drum interacts with the devices for disposing the carcass structure.

61. (new) The apparatus of claim 54, further comprising:
at least one first delivery member designed to form the tread band; and
at least one second delivery member designed to form the pair of sidewalls.

62. (new) The apparatus of claim 54, further comprising:
at least one first primary drum;
at least one second primary drum; and
at least two actuating assemblies;

wherein the at least one first primary drum is engaged by a first actuating assembly,
wherein the at least one second primary drum is engaged by a second actuating assembly,
and
wherein the at least one first and second primary drums interact sequentially with devices
for disposing the carcass structure, the at least one unit for applying the tread band, and the at
least one unit for applying the pair of sidewalls.

63. (new) The apparatus of claim 54, further comprising:
a building station for forming the carcass structure on a building drum; and
devices for transferring the carcass structure from the building drum to the at least one
primary drum.

64. (new) The apparatus of claim 63, wherein the devices for transferring the carcass
structure comprise:
a storage magazine; and
an auxiliary transfer member;
wherein the auxiliary transfer member transfers the carcass structure from the building
drum to the storage magazine.

65. (new) The apparatus of claim 54, further comprising:
devices for associating auxiliary elastic-support inserts with the at least one carcass ply;
wherein each of the auxiliary inserts comprises:

a radially internal edge disposed close to one of the annular anchoring structures;

and

a radially external edge disposed close to a side edge of the belt structure.

66. (new) The apparatus of claim 54, wherein the transfer member moves the belt structure from the auxiliary drum to the carcass structure disposed on the at least one primary drum.